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7 December 2012

Mr Philip Weickhardt
Presiding Commissioner, Productivity Commission
Electricity Network Regulatory Frameworks
GPO Box 1428
Canberra City ACT 26001
By email: electricity@pc.gov.au

Dear Mr Weickhardt,

The Clean Energy Council (CEC) welcomes the opportunity to participate in this stage of the Productivity Commission's Electricity Networks Regulation Frameworks Review.

The CEC is the peak body representing Australia's clean energy and energy efficiency industries. The CEC works with over 550 member organisations and governments to identify and address the barriers to efficient industry development in the stationary energy sector. Its priorities are to:

- create the optimal conditions in Australia to stimulate investment in the development and deployment of world's best clean energy technologies
- develop effective legislation and regulation to ensure a sound investment environment for the clean energy industry
- work to reduce costs and remove all other barriers to accessing clean energy

In the coming years the clean energy industry is expected to be the single largest investor in new transmission infrastructure. Clearly the CEC appreciates the dire need for an efficient investment environment in the National Electricity Market and acknowledges the importance of the regulatory frameworks to facilitate this.

The CEC expects that some of the key issues under consideration by the Commission would be more efficiently considered with a holistic approach where market externalities such as the renewable energy target are considered in conjunction to the proposed recommendations and the Commission's terms of reference.

The attached submission is our response to the Draft Report which represents the view of the majority of our members. Please do not hesitate to contact the undersigned for any queries regarding this submission. The CEC would be pleased to meet with the Commission to discuss this submission in more detail.

Yours sincerely,

Tom Butler | Network Specialist | Clean Energy Council

Summary

The CEC is pleased to have the opportunity to prepare this submission to the Productivity Commission's (Commission) Draft Report in Electricity Network Regulatory Frameworks, and commends the Commission on the efforts to date on an intensive review of what is an increasingly complex essential service.

Collectively, members of the CEC are expected to be the largest investor in new transmission infrastructure in the NEM in the coming 10-15 years. Clearly, efficiencies in the NEM's transmission frameworks are of the upmost importance to the CEC's members. The CEC welcomes the Commission's recognition that the regulation of the electricity network needs an overhaul in order to deliver a more efficient system and save billions of dollars by reducing unnecessary expenditure.

In common with many other advanced economies Australia's electricity networks are undergoing a period of transition. Significant increases in electricity costs for households coupled with emissions reduction and renewable energy targets are creating a climate of turmoil as the primary function of our electricity networks shifts. Spurred by consumer preference, the clean energy industry is at the heart of this transformation.

This submission contains four key parts:

- Part 1 considers the evidence of market power within the NEM and presents arguments for support of reform of the connections frameworks for new generation on the basis of this evidence.
- Part 2 considers the Commission's proposal to support the AEMC's proposed Optional Firm Access model and further market reform options and presents some specific concerns on the Commission's position.
- Part 3 considers the complexities of the ongoing growth of distributed generation and provides some additional avenues for the Commission to build further recommendations on.
- Part 4 considers the enhancement of demand management in the NEM and the associated enabling technologies.

The majority of this submission draws both on the Commission's draft recommendations in conjunction with the Commission's terms of reference and the stated approach to the terms of reference. In particular, this submission adds value to the Commission's direction to

(a) "improve the overall economic performance of the economy through higher productivity in the public and private sectors in order to achieve higher living standards for all members of the Australian community

(b) reduce regulation of industry where this is consistent with the social and economic goals of the Commonwealth Government

(c) *encourage the development and growth of Australian industries that are efficient in their use of resources, enterprising, innovative and internationally competitive*"[1].

In addition to the above the CEC would also like to frame this submission within the context of some points raised by the Commission on the rationale for the regulation of networks. In particular the CEC understand the Commission's expectation that "*for the immediate future, it is likely that without regulation, electricity networks could exercise substantial and enduring market power*"[2] and that the "*main, and hardly unsurprising, lessons from unregulated monopolies wielding market power are that they charged high average prices and that they spent significant resources trying to maintain that power*"[3].

The CEC also notes that there is an interrelationship between the Commission's review and the Australian Energy Market Commission's (AEMC) Transmission Frameworks Review. Some of the matters under consideration by the latter are directly related to this review and the Commission should also consider the more detailed aspects of that review, and associated submissions.

The CEC would also like to draw the Commission's attention to the stated cases for regulating monopolies to avoid 'deadweight costs'[4]. In particular, the case that welfare can be reduced by networks failing to fully and efficiently meet consumer preferences[5] is of direct relevance to the CEC's objectives. This focus is because, whilst the legislated Renewable Energy Target (RET) is a direct measure to meet consumer preference and their long term interests, the CEC believes that some areas where new entrant generation interacts with networks is done so without sufficient regulation. The CEC believes that in almost all of these cases networks behave in the exact ways that the Commission describes that an unregulated monopoly would behave[6].

The CEC clearly understands that the RET is treated as market externality under the NEO (and does not wish to debate the need for a triple bottom line objective here). However, it is essential that the Commission recognises the need for efficiencies in the way in which generators investing in the NEM, as a result of the RET. The regulatory framework should facilitate the most efficient environment possible to encourage private investment. This should be a subject within the Commission's expanded approach to the terms of reference, as quoted above.

The CEC is concerned that the Commission has recommended that the AEMC's optional firm access model be adopted. The CEC expects that this model is far from proportionate to the problem and has grave concerns that ongoing long term market disruption will result from the Commission's recommendations for market reform. The benefits of the Commission's

[1] Productivity Commission 2012, *Electricity Network Regulatory Frameworks, Draft Report*, p. 69. Canberra.
[2] Ibid, p. 118.
[3] Ibid, p. 119.
[4] Ibid, p. 121.
[5] Ibid, p. 121.
[6] Ibid, Chapter 3.

proposals have not been demonstrated to exceed the costs. The CEC expects that a more measured approach would include the proposed reinforcement of obligations in the rules which are currently not followed through by TNSPs. These obligations would enable the market to properly assess the risk of congestion, and subsequently disorderly bidding.

The CEC suggests that any recommendation to take up optional firm access or nodal pricing should be founded on a long term analysis of the costs and impacts of disorderly bidding. An appropriate starting point could be establishing a framework for analysing this, rather than promoting radical market reform.

Some aspects of the introduction of distributed generation are not fully appreciated by the Commission. In particular, and in line with the Commission's expanded terms of reference, the CEC believes that the development of a methodology to value network benefits should be undertaken by the AER and the Standing Council on Energy and Resources. In conjunction there is a need for the development of standardised universal technical standards for the connection of distributed generation. This would enable continued growth to occur in the most efficient way as a balance would be struck between reasonable technical requirements and efficient outcomes.

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1 New entrant generation and deadweight costs

The Commission has identified that there are some complexities in the identification of channels where market power is wielded, as monopolies are generally regulated[7]. While this may be the case the CEC disagrees with the Commission's view that there is little evidence of the behaviour of monopolies in the absence of regulation[8]. The CEC believes that there is evidence within the NEM of this within the current generator connection frameworks. The CEC recommends that the Commission consult with the generation industry directly in order to understand the cost implications of the exhibition of market power by TNSPs[9].

The following sections provide the arguments which underpin the CEC's position with consideration of the types of deadweight costs that the Commission discusses in Chapter 3 of the Draft Report. Specifically:

(a) Distributional effects of inefficient investment in networks by new entrants, and
(b) Production inefficiency and adverse impacts on investment.

1.1 Distributional effects: negotiated transmission services

As the Commission would be aware the AEMC is currently looking into the connections frameworks and the treatment of connections by TNSPs. This aspect of the Transmission Frameworks Review has stemmed from concerns from connecting generators that the provision of services by the incumbent TNSPs occurs within a non-regulated environment.

The National Electricity Rules intended that monopoly services provided to a connecting generator are delivered as *negotiated transmission services*[10]. Under this arrangement the connecting party would be expected to hold countervailing market power such that negotiations would produce efficient outcomes. An arbitration framework supports these negotiations. In light of the NEO this negotiate / arbitrate model was expected to reveal the most efficient cost and minimise distribution to consumers.

This intent was evident from the early stages of the design of the NEM. In 1993 the final recommendations on the structure of the *Interstate Transmission Network for Eastern and Southern Australia*[11] (the NEM as we now know it) were made by the National Grid Management Council (NGMC). These recommendations underpin today's NEM. At that time the Council clearly articulated deep concerns about TNSPs exerting monopoly power in the

[7] Ibid, p. 116.
[8] Ibid, p. 119.
[9] The CEC can provide a list of parties which will be interested in taking part in this consultation confidentially.
[10] This was demonstrated in the CEC's submission to the Transmission Frameworks Review.
[11] National Grid Management Council, 1993, *The Structure of an Interstate Transmission Network for Eastern and Southern Australia*, p-p. 29-30.

connection process and the conflict of interest that arises from state owned corporations behaving in this way.

The NGMC's framework set out a number of criteria which underpin its recommendations, including the appropriate forms of regulation to be applied to network corporations. Crucially, there was a need to ensure that no network could hinder a new connection. The framework called this "*Open and Non-discriminatory Access to the Grid*"[12] which was supported by the Grid Protocol[13]:

> *"A central feature of the Protocol is the encouragement of trade in electricity through non-discriminatory access to the National Grid. The Protocol defines the responsibilities, procedures, terms and conditions that must be met by both existing and new Participants (grid owners/operators and grid users).*
>
> *Non-discriminatory access is seen to be capable of being provided through each of the structural options provided grid owners and operators are required to comply with the provisions of the Protocol. Whilst the Protocol does not have the force of law, it will be necessary, irrespective of the structural option, to ensure that the conditions of open and non-discriminatory access are continuously available to users. These conditions can best be ensured by establishing separate legal agreements between grid owners/operators and users.*
>
> *In addition to any legal arrangements between grid owners/operators and users, open and non-discriminatory access will be supported by :*
>
> - *grid charges being set by parties independent of the grid owners/operators (i.e. the regulator); and*
> - *the physical characteristics of the network (i.e. the laws of physics which determine physical power flows) that would inhibit grid owners /operators from undertaking actions to prejudice the operations of particular customers or generators.*
>
> *Charges for access to and use of the grid are to be established by the National Grid Management Council independent from the grid owners/operators. As such, the charges for entry, exit and use of the network are to be prescribed by the National Grid Management Council. Furthermore, the technical aspects (i.e. procedures for connections, the physical assets required and their performance characteristics) relating to entry, exit and use of the network are prescribed in the Protocol, providing no latitude for grid owners/operators to place barriers in front of or discriminate against users. Grid charging and grid entry and exit arrangements are easily auditable*".

Clearly the original intent for the market was that *connection service* charges were not only regulated but the NGMC went as far as recommending that they be prescribed by the regulator in order to overcome concerns of TNSPs monopolising over the process. The rules

[12] Ibid, p. A1.
[13] The original National Electricity Rules.

were also intended to underpin the *connection* process by prescribing it to a significant degree to ensure that no barriers could prevent efficient access.

The risks of TNSPs abusing their monopoly position were also discussed in the NGMC's recommendations. In relation to pricing where it was decided that "*these concerns should be reduced by the application of uniform pricing principles*"[14]. The recommendations advised the following in relation to the appropriate regulation to be applied to manage these concerns

> "*Non-discriminatory access is likely to be perceived to be the greatest, with the Multiple Network Corporations and National Network Corporation* [a different structural option considered and rejected] *structures, which conduct transmission independently from the other activities of the Electricity Supply Industry. Self-regulation would not be appropriate because of the enormous monopolistic powers implicit in such a corporation*"[15]
>
> "*Self-regulation is not considered appropriate for the Multiple Network Corporations option with private participation, because of potential conflict between Government and private sector interests in this arrangement*" … "*It is considered that external regulation would be more appropriate than self-regulation for these options*"[16]

The NGMC recommendations clearly showed concern for the market power that TNSPs can wield and the potential conflicts of interest that arise from government owned corporations integrated with private investment. In response the NGMC very audibly recommended that 'self-regulation' should be avoided.

With regards to connections today's framework reflects exactly those conditions which the Council was trying to avoid: connections are essentially 'self-regulated' by TNSPs and the conflict of interest arising from state owned corporate TNSPs charging inefficiently for new connections has materialised.

As identified above, and by the AEMC in the Transmission Frameworks Review the current negotiating frameworks are failing to produce efficient outcomes as a result of market power held by TNSPs. New generators are unable to connect efficiently and, ultimately the increased cost is distributed to consumers. The AEMC has proposed two possible solutions to overcome this issue and these are discussed below. The CEC would be happy to meet with the Commission to discuss.

[14] National Grid Management Council, 1993, *The Structure of an Interstate Transmission Network for Eastern and Southern Australia*, p. A6.
[15] Ibid. p. A21.
[16] Ibid. p. 19.

1.1.1 Open-book provision of negotiated transmission services by TNSPs

The AEMC has also proposed an arrangement for open-book delivery of network augmentation by the incumbent TNSP[17]. This approach would make significant headway to improving the negotiating process, holding TNSPs accountable for their decisions and providing for more efficient connections and information sharing between TNSPs and connection applicants. In lieu of contestability this approach is expected to provide the greatest support for new connections by breaking down some of the market power held by TNSPs through increased information transparency. The CEC argues that the National Electricity Rules had intended for an open-book approach to connections initially.

In the submission to the AEMC's Second Interim Report the CEC provided evidence to the AEMC of how the National Electricity Rules have been manipulated in order to enable TNSPs to avoid their obligations under the rules[18].

Further recent evidence can be found in the AER's recent draft determination for ElectraNet's negotiating framework[19] where their initial proposal appears to avoid the rules' obligation to provide costs for connection along with a demonstration that subsequent charges reflect the costs. The AER notes that this is the second time that ElectraNet / Powerlink (which owned a significant stake in ElectraNet at the time) have attempted to avoid this obligation.

These behavioural patterns demonstrate that even if the AEMC's proposed open-book arrangement was to proceed it would require additional regulatory oversight to be as effective as planned.

The CEC believes that a more tightly regulated framework would be required in order to supplement the AEMC's proposal and overcome the inefficiencies caused by market power. The proposed enhancements are outlined below. More detail is provided in Section 7 of the CEC's submission to the Transmission Frameworks Review[20]. Although some additional obligations are placed on the AER by these enhancements they are well within the present capabilities of the regulator and only seek to retain the intent for the market as laid out at inception by the NGMC.

- The concept of reward being commensurate to risk is visibly missing from the connection process. Despite the intent to balance this, prudential measures in the rules allow TNSPs to require a full bank guarantee for work funded by a connection applicant, who subsequently carries all of the risk. These same providers also demand commercial rates of return from the connection applicant while avoiding through the

[17] AEMC 2012, *Transmission Frameworks Review, Second Interim Report*, p-p. 83-92, 15 August 2012.
[18] CEC, 2012, *Clean Energy Council Submission to EMO0019 Transmission Frameworks Review: Second Interim Report*, p-p. 18-21, available: http://www.aemc.gov.au/Media/docs/Clean-Energy-Council---121025---submi-56a7185d-98c8-4fd9-bcab-fc4da368f1fc-0.pdf
[19] AER, 2012, *Draft Decision, ElectraNet Transmission determination 2013-14 to 2017-18*, p-p. 262-263, available: www.aer.gov.au.
[20] CEC, 2012, *Clean Energy Council Submission to EMO0019 Transmission Frameworks Review: Second Interim Report*, p-p. 57-83, available: http://www.aemc.gov.au/Media/docs/Clean-Energy-Council---121025---submi-56a7185d-98c8-4fd9-bcab-fc4da368f1fc-0.pdf

provision of a bank guarantee. This is a clear inefficiency which must be resolved by regulating the return earned to a rate which is commensurate to a negligible risk investment.

- The AER should undertake a role of collecting reports on all charges for negotiated transmission services. This can be undertaken retrospectively and would not seek to analyse individual projects but would serve to identify systemic inefficiencies. The CEC expects that this would be a powerful 'de-facto' arbitration mechanism in the long term which would also support any future arbitration processes.

- A tighter constraint must be placed on the reporting of the processing of a connection application by a TNSP. Such a framework is visibly missing from the rules and must be included in order to ensure that TNSPs can be held accountable for the activities which they undertake in processing connection applications.

- All connection process publications applied by TNSPs should be reviewed and approved by the AER for consistency against the rules.

- The AER should undertake regular reporting to the AEMC on the performance of the arbitration framework. Significant detail would not be required but this would enable the AEMC to have clear visibility of the ongoing effectiveness of the proposed open-book arrangements.

The CEC believes that the Commission should support the AEMC's open-book proposal as the minimum benchmark moving forward, and should support the additional features presented above as they are aligned with the original intent of the rules and the goal of efficient connection practices and subsequently reduced distribution to consumers.

1.1.2 Contestable provision of network augmentation for new connections

In lieu of the proposed open-book arrangement (discussed above) the AEMC is considering the introduction of contestable delivery of network augmentations for new connections. The CEC believes that significant efficiency gains would be found under such a framework and that the current Victorian arrangements are already delivering increased efficiency in the delivery of network augmentations for new connections, as a result of competition.

The CEC has proposed an arrangement whereby the existing TNSPs across the NEM would compete for this work within other jurisdictions. There are currently 7 registered TNSPs in the NEM that can deliver transmission assets with the 'economies of scale and experience' as identified by the AEMC[21].

There are clearly enough experienced contenders for a competitive market under this framework (in fact the Victorian model has shown that even the *threat* of competition is

[21] AEMC 2012, *Transmission Frameworks Review, Second Interim Report*, p. 96, 15 August 2012.

producing improved outcomes). This approach would completely avoid the tax implications identified by the AEMC[22] that relate to ownership transfer of the assets. Each competing TNSP is more that capable and comfortable in taking on board any risk associated with outages or failures as this is already part of their business model.

Some assimilation of technical standards may be required, or publication of the technical standards applied by each incumbent TNSP in each region. Alternatively publication could be avoided by allowing the 'sharing' of standards between TNSPs. This would be easily managed through the appropriate licence conditions or contracts.

Regardless of transmission businesses' claims of the publication of standards breaching intellectual property rights this should be overridden by the regulatory framework on the basis that efficient regulation requires complete public transparency and consistency. The AER's determinations should be supported by complete information transparency moving forward as this would be in the interest of the NEO and efficient transmission investment. A transparent framework is also consistent with the NGMC's intent at market inception[23].

The CEC requests that the Commission supports the encouragement of competition in the delivery of network assets as a measure to increase the efficiency of network investment.

1.2 Transmission production inefficiency: risks for generation investment

The CEC considers that the greatest risk to ongoing operational efficiency of the NEM's networks is the current ability for TNSPs to avoid undertaking the necessary studies to inform connecting generators of the power transfer capability of their networks. Perverse incentives currently exist which allow TNSPs to over allocate generator connections to their networks. The outcome being that the TNSP receive profits from these connections, while making little consideration for the capability of their own networks to convey the electricity generated across them. This is likely to lead to highly inefficient investment and production inefficiency in the long term.

The connection process (Chapter 5) obligations of the National Electricity Rules constitute prescribed services. Prior to the market starting the NGMC set out their recommendations for regulation to be applied to all TNSPs. Included in these recommendations was the requirement that the rules relating to entry and use of the network are prescribed within the rules to the extent that they provide "*no latitude for grid owners/operators to place barriers in front of or discriminate against users*"[24].

[22] Ibid, p. 88.
[23] National Grid Management Council, 1993, *The Structure of an Interstate Transmission Network for Eastern and Southern Australia*, p. 27.
[24] Ibid, p. A1.

As a result Chapter 5 of the rules prescribes the connection process in detail in order to achieve efficient outcomes in the interface between these parties. Clause 5.4A(e) of the rules expects that the TNSP provides sufficient information for a connection applicant to fully assess the commercial significance of the network user access arrangements sought.

The rules intended that an obligation was placed on TNSPs to consider the capability of their networks in detail and advise (but not guarantee) connecting parties of this capability such that the connecting party, and wider market, understands the impacts of congestion and associated risks. TNSPs are the only party with the requisite information to do this efficiently. To date TNSPs have demonstrated a culture of avoidance of this matter under the guise of it placing some form of 'guarantee' on them which they then have no control over. The basic obligations of Clause 5.4A(e) have nothing to do with a guarantee – it's simply sensible and efficient engineering practice which allows the market to assess congestion risk (and subsequently disorderly bidding risk) in the most informed way possible.

Since these arrangements refer to a power transfer capability through the network the rules expect that the TNSP would provide information to the connection applicant on the conditions under which the power transfer capability would be available, reduced or unavailable. This requires that the TNSP provides clear and transparent connection studies that define the conditions within the network under which the power transfer capability will occur. This does not appear to be evident in the connection process.

Without requiring a TNSP to undertake these engineering studies it is likely that a highly inefficient market could arise as a result of TNSPs being capable of making profits from new connections while connection applicants are not provided with sufficient information to effectively manage the project risk profile. TNSPs are the only party with the prerequisite information and it is crucial that an obligation is included in the rules to so that generators can make efficient investment decisions and this clear cause of production inefficiency can be overcome.

The detail of this matter is discussed in Section 1 of the CEC's submission to the Transmission Frameworks Review[25]. As this point is technical in nature the CEC will be happy to meet with the Commission and discuss detail to ensure that there is a clear understanding.

1.3 Information request

The Commission seeks feedback on the harmonisation of Chapters 6 and 6A. The CEC agrees that there are some significant flaws in Chapter 6A and in some areas it is completely misaligned with the rest of the rules. From a generator's perspective Chapter 6A, and in particular the negotiating framework, requires reform.

[25] CEC, 2012, *Clean Energy Council Submission to EMO0019 Transmission Frameworks Review: Second Interim Report*, p-p. 11-13, available: http://www.aemc.gov.au/Media/docs/Clean-Energy-Council---121025---submi-56a7185d-98c8-4fd9-bcab-fc4da368f1fc-0.pdf

Chapter 6A was developed in order to "*increase the clarity, certainty and transparency of economic regulation so as to provide a more certain regulatory environment for efficient long term investment*"[26]. Despite this it is unclear as to why the regulator would be forced to treat transmission entirely differently to distribution and this would appear to be at the heart of much of the regulator's frustration.

The development of Chapter 6A appears to have been extremely unusual. As the regulatory framework sits within the mandate of the Minister for Energy and Resources this minister's department should be heavily involved in the development of significant changes to the regulatory frameworks, such as the introduction of Chapter 6A. Yet the minister was not a proponent for the development of Chapter 6A. The AEMC proposed the rule change and it was then developed through the AEMC's normal consultation process, with very little input from the minister's office. The CEC queries the validity of this process.

The CEC recommends that Chapter 6A be reviewed in entirety by an independent body or expert to ensure that this chapter is consistent with the rest of the rules and the NEO, and that the economic regulation of TNSPs under Chapter 6A is in fact delivering the most efficient outcomes for consumers. This body or expert should be independent and have the capacity to advise the Standing Council on Energy and Resources of the necessary changes needed, which should be made without consultation. This body or expert would be best to determine if there are significant benefits to harmonising Chapters 6 and 6A.

[26] AEMC 2006, *Draft Rule Determination; Draft National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006*, p. 13, Rule Determination, 16 November 2006, Sydney.

2 Market reform

The CEC believes that the Commission has not made a strong case for implementing Recommendations 18.1 and 18.2. The proposed reform options are expected to create a disincentive for future investment in the NEM, create significant (unaccounted for) regulatory burden and have not been shown to be proportionate to the problem of disorderly bidding.

With regards to the CEC's response to the proposed options for market reform the CEC refers the Commission to its recent submission on OFA for the AEMC's Transmission Frameworks Review[27]. The Commission should also consider the numerous submissions by other industry groups, market participants and expert consultants.

With regards to OFA it is unhelpful to the wider debate to promote the model on the basis that it will improve the utilisation of interconnectors. The model needs to be considered on a holistic basis under a detailed cost benefit analysis.

The CEC believes that the OFA pricing mechanism is very much underdeveloped. The lack of regulation around price setting for firm access has not been considered by the AEMC and could lead the market dangerously close to promoting significant market power within TNSPs. In order for LRIC to work the TNSP must apply a range of input assumptions based on long term expectations for demand, other firm access requests and generator entry. The margin for error here is massive. In the current proposal only the pricing *methodology* is regulated which leaves the TNSP to make judgement on the assumptions and subsequent price paid for firm access.

Since the TNSP also bears the risk of being penalised for not meeting committed firm access levels the associated assumptions would be extremely conservative in order to mitigate this risk. As transmission investment under this proposal would be entirely subjective it could not be 'market led' as proposed.

If the regulator was to consider the input assumptions applied by each TNSP, for every 'flowgate' in the NEM (there are thousands), the regulatory burden would far outweigh any material benefit to OFA.

OFA would create a condition whereby a first mover to obtain firm access would force many other generators to secure it also. As the first mover would then be exhibiting market power each affected generator would have to mitigate this by procuring firm access. On this basis there is significant doubt over the optionality of the model. In conjunction OFA creates new opportunities for inefficient dispatch to occur in the NEM.

The CEC believes that OFA proposal blurs the currently defined boundaries of regulation which, in the CEC's view would fundamentally impede efficient regulation and would

[27] CEC, 2012, *Clean Energy Council Submission to EMO0019 Transmission Frameworks Review: Second Interim Report Optional Firm Access*, available: http://www.aemc.gov.au/Media/docs/Clean-Energy-Council---OFA-submission---121019-d3432560-f44e-4fd6-9a97-6125ba77d1cb-0.PDF

contradict the intent of the NEO relating to efficient investment for the long term interests of consumers.

Proceeding with the current model will likely promote significant production inefficiency. The AEMC has not yet provided any cost benefit analysis for the OFA concept. If the Commission believes that the impact of disorderly bidding on interconnectors creates significant inefficiency the Commission's recommendations should include the development of a methodology to value the associated cost on an ongoing basis. In this way the market can be certain that a fundamental shift such as OFA is justified on a holistic basis.

The CEC believes that the current locational signals for generators (marginal loss factor, congestion risk and connection costs) are strong if they are made properly audible. Much of the concern about disorderly bidding could be better managed by ensuring that TNSPs meet their obligation to undertake detailed studies to analyse congestion. As discussed above the current framework creates perverse incentives not to. This must be resolved.

The CEC refers the Commission to the previous statements regarding the promotion of efficient investment in the NEM. The market is undergoing a fundamental change which will require investment in the tens of billions of dollars over the years ahead. The vast majority of this investment will come from the renewable energy sector.

The Commission's proposals to promote ongoing changes to the market's frameworks (namely OFA followed by nodal pricing) would be radical and *disruptive* for all market participants. In conjunction it would deter future investment in the market for at least the next 15 years while the market resolves the ongoing complexities of new frameworks.

Despite the above, neither the Commission nor the AEMC has fully quantified the problem being solved by the implementation if either model or determined that the benefits outweigh the implementation costs.

3 Distributed Generation

The CEC is concerned about the Commission's approach to the introduction of distributed generation as a 'disturbing' new feature in the market. In doing so it appears that a simple fact has been overlooked by the Commission: growth in localised distributed generation is now proceeding on the basis of consumer preference alone. This growth will fundamentally change the way in which our networks are used. In time this evolution will reveal the true productivity potential of the network as an ancillary, or parallel source of electricity. Thus, the Commission's role here should be to identify barriers to the continued uptake if distributed generation such that consumer preferences can be met in the most productive way.

A clear demonstration of this is the continued uptake of solar PV and the CEC notes that the figures quoted on p. 442 of the report requires updating and suspects the figure for installed capacity of domestic PV is now closer to 2,000 MW. This has created the opportunity for nearly one million homes across Australia to control their own costs for electricity consumption.

The CEC proposes the following areas for further consideration by the Commission.

3.1 Determining network value for exported energy

In the coming years distributed generation will play a pivotal role in the reduction of peak demand, and subsequent deferral of investment in networks. In turn this will increase the productive efficiency of networks. As acknowledged by the Commission some distributors are complaining about distributed generation being installed in locations where it provides no support to the network.

This position overlooks the wider benefits that the continual installation of domestic generation is having on the economy. To date Australians have invested just under $10 billion dollars in domestic solar generation[28]. The economic benefits of which are expected to far outweigh the purported additional network costs.

The CEC suggests that distributors need to be more transparent about the purported additional costs[29]. To date little material evidence has been provided. Many of the complaints relate to network conditions which already existed. Over-voltage has been well recognised to be very much present in Australian distribution networks for decades as a result of distributors stretching network equipment to extremes. Power quality is not just related to solar PV. Every single electronic device creates power quality emissions. The increased use of computing

[28] SKM MMA, 2012, *Benefit of the Renewable Energy Target to Australia's Energy Markets and Economy*, available: www.cleanenergycouncil.org.au.
[29] Productivity Commission 2012, *Electricity Network Regulatory Frameworks, Draft Report*, p. 450. Canberra.

equipment is increasing power quality issues regardless of solar PV. In most cases distributors do not have a detailed record of network power quality issues. Therefore it is extremely difficult to attribute any impacts to distributed generation. In conjunction, all solar PV equipment meets the relevant Australian Standards and is fit for connecting to the distribution network.

If there are significant costs associated with the alternate use of distribution networks the Commission should be examining least cost measures to overcome them whilst meeting consumer preferences for increased distributed generation. Advocating for the removal of the small scale component of the RET[30] without sufficient evidence of any cost exceeding benefits makes a poor case for policy reform.

In conjunction, and given the fact that consumer preference is now driving the uptake of distributed generation, the Commission should recommend that a the AER work with distributors and the Standing Council on Energy and Resources to develop a standardised approach for determining the network value to be attributed to distributed generation across the range of generation technologies currently available. Such a process must be driven by an independent body such as the AER to ensure that vested interests do not skew the value determination one way or the other.

This approach is expected to identify a mechanism under which the continued benefits of the uptake of distributed generation can be realised in the most productive way.

3.2 Distributed generation connection frameworks

As demonstrated in the CEC's previous submissions the current connection frameworks are insufficient to manage the process efficiently and desperately require reform.

Distributors see generator connections as an obligation rather than as part of their day to day activities. To date this approach has led to major inefficiencies in the connection process where distributors have limited staff available, no clear technical requirements for access and in some cases little interest in processing an application to connect. In Victoria these issues have led to the mistrust of distributors and exposed generation developers to millions of dollars of additional expenses and wasted time in the connection process.

The CEC notes that the Commission understands its frustration with regards to the introduction of the NECF reform package. Despite the introduction of Chapter 5A increasing uncertainty for some generation connections there are benefits to introducing a standardised approach into the National Electricity Rules. The clearest of which is the ability to request, and debate rule changes which can create a more robust connection framework and provide some certainty for generators. The CEC is currently developing a rule change proposal for Chapter

[30] Recommendation 13.1.

5A and requests the support of the Commission. The CEC would be happy to meet and discuss this proposal.

In conjunction with the proposed rule change the CEC is also advocating for other incremental changes to the connections framework. The Commission should also consider the productivity benefits of the development of standardised universal technical access standards for the connection of distributed generation in the NEM. This should be undertaken through consultation with distributors and equipment suppliers and guided by the Standing Council on Energy and Resources such that acceptable workable standards guide all future connections in the NEM.

3.3 Distributed generation incentive scheme for networks

In order to achieve efficient outcomes from demand management and embedded generation the current regulatory framework needs to be reformed in order to create an attractive investment environment for third parties to invest in smart solutions.

As recognised by the AEMC, some of the potential benefits of enhanced contributions from embedded generation and the increased use of storage in addition to demand management can lead to "*an increase in market participation and thus more competition in peak generation capacity and improved efficiency in the use of peaking capacity*"[31].

The existing Demand Management and Embedded Generation Connection Incentive Scheme (DMEGCIS) needs to be reformed so that it drives innovation and cost reduction. The measures promoted by this scheme both have a significant potential to increase the productivity of our electricity networks, reduce costs to consumers and reduce the environmental impacts of the electricity sector.

To date the scheme has been a poor performer. The design of the current scheme only represents around 0.1-0.2 per cent of a distributor's revenue and lacks an effective mechanism to reward distributors when they create innovative solutions. its performance was recognised by the AEMC when making the final determination to include the connection of embedded generation who stated the recognition that "*the benefits for the promotion and uptake of non-network alternative investment brought about by the rule are likely to be small*"[32].

Appropriately placed incentives and targets for distributors will be required in order to make a real contribution and the scheme requires review. The Commission has recommended that the

[31] AEMC (2012), *Small Generation Aggregator Framework, Draft Rule Determination*, 5 July 2012, Sydney, p. 6.
[32] AEMC 2011, *Inclusion of Embedded Generation Research into Demand Management Incentive Scheme*, Rule Determination, 22 December 2011 , Sydney, p. 32.

AER reviews the DMEGCIS to ensure it operates effectively to support deferral of network expansion[33].

Given the technical nature of the proposals from distributors under the scheme the regulator may not be best placed to make an assessment of the scheme in its current form. Two options are available for this scheme to be implemented seriously: the AER's capacity could be enhanced to provide sufficient technical support, or a central technical body could undertake a validation of the technical performance of the distributor's proposals, thus limiting the role of the AER to economic matters only. This body could also assist in overcoming any technical barriers cited by distributors.

An alternative scheme could create distributor focussed targets for peak demand reduction which would remove the need for the AER to make a technical assessment, as scheme performance would be measured by the AER instead.

[33] Recommendation 12.2

4 Demand management

Peak demand has increased dramatically in recent times. Subsequently it is driving network investment solely to meet the needs of a very small fraction of time each year. Other options do exist and significant benefits could be realised through better demand management.

The CEC concurs with the Commission's recommendations that a nationally focused, package of reforms which address the major regulatory barriers to the efficiency of electricity networks is required. The current regulatory framework holds significant inefficiencies. It fails to provide the right incentives for investment in demand reduction or properly consider the long term interests of consumers in making investment decisions in the NEM. Currently there is an inherent focus on the short term and incentives to increase investment in network infrastructure[34] without capturing the overall benefit of infrastructure deferral. This in turn leads to a significant underestimation of the value of demand management.

Regulatory arrangements need to be made more relevant to the challenges of the future. A package of reforms that drives consumer orientation in the NEM by creating a supporting consumer representative body for the regulatory process is a crucial step in ensuring the NEM services the needs of consumers, and subsequently the NEO.

Demand side participation (DSP) measures such as dynamic pricing, direct load control, automated remote energy management systems, storage, energy efficiency and embedded generation can all play a crucial role in demand management. In turn these measures will help consumers to control electricity bills by reducing unnecessary expenditure on meeting peak demand by making informed decisions on when and how they used power.

The CEC's key recommendations to support the uptake of demand management include:

- Electricity consumers need to understand the full costs of electricity through the introduction of transparent and cost reflective price signals.
- Consumers require access to easily interpretable information on their electricity consumption through time-of-use smart meters with integrated in-home displays, web based customer portals and other similar innovations.
- Any roll out of metering and demand side actions needs to be supported by a coordinated government and industry led education and information campaign to assist consumers to make informed choices about their electricity usage and the wider benefits to the energy market.
- The development of a central data hub to capture information collected by smart meters whilst, with care to ensure consumer privacy, allowing third parties to analyse usage patterns by consumers and industry and develop innovative products to meet the market's needs.

[34] Garnaut, 2011, *Garnaut Review 2011: 11 Electricity Transformation*, available: www.garnautreview.org.au.

- Changes are required to the current regulatory frameworks to facilitate a workable and streamlined commercial framework for third parties to invest in providing demand side solutions in order to capture the benefit of infrastructure deferral.
- Recognise that energy storage technologies could play a significant role in demand management, but to correct the current underinvestment in storage the price signals must capture the benefits that accrue to multiple parties at present[35].

4.1 Consumer participation in the NEM

As acknowledged by the Commission, the AER needs more resourcing, expertise and accountability to progress reform. In particular, areas which lead to enhanced regulation, greater scrutiny of augmentation, introduction of cost reflective pricing structures and the application of incentive mechanisms will require increased regulatory effort.

To facilitate the input of consumers into the regulatory regime, the Commission proposes the creation of an industry-funded representative consumer body. The CEC sees merit in such a body which could be established to represent the interests of all consumers into the regulatory review process. This body would need to have the required expertise, funding, resources and remain entirely independent to effectively represent the interests of the consumers.

The evidence suggests[36, 37, 38] that consumers are concerned by rising energy costs and are willing to take action to use less energy, but that more information and the right tools are needed to make informed choices about the way they use electricity and the measures they can take to use it more productively. A CHOICE survey[39] demonstrated a lack of understanding by consumers of the part their own actions can play on their electricity bills. Access to information and consumption data in order to appreciate the differences that specific actions make to their energy use should be accompanied by allowing competition and product differentiation in energy retailing in order to provide genuine choice. Network operators, retailers and other parts of the electricity supply chain need to be incentivised to be able to better support this consumer choice with a wider array of products and services that can be offered.

Being able to easily access and interpret information on actual energy consumption over the day with the support of smart meters is crucial to aid consumers to understand how to take action to modify their electricity consumption. Consumers should be able to access their own raw historical and current data as well as aggregated data to allow them to monitor their own

[35] *Energy storage in Australia: commercial opportunities, barriers and policy options*, Marchment Hill Consulting, October 2012.
[36] Auspoll survey for the Clean Energy Council, June 2011.
[37] *Energy shock: pressure mounts for efficiency action*, AiGroup, July 2012.
[38] CHOICE online survey of Australian household energy decision makers, June 2012.
[39] Ibid.

average electricity use and load profile including at times of peak demand and compare it to aggregated consumer segment load profiles. Load profiles coupled with cost reflective pricing practices would be particularly powerful in allowing consumers to observe their actual costs associated with their consumption patterns especially during periods of peak demand.

Collecting general market information on consumer segment load profiles will inform the development of load management programs and support system reliability under contingency conditions. The CEC considers that it would be worth exploring a central information hub to capture information collected by smart meters and provide analysis of usage and trend patterns for use by consumers and industry. Such an approach would need to learn from experience in other jurisdictions such as the United Kingdom. The appropriate agency to do this would need to be selected.

Clarifying the framework for exchange of data through the AEMC's proposal to make changes to the National Electricity Rules and National Customer Energy Framework to help reduce the current complexities about accessing consumption data will open up the market in the provision of demand side options. It goes without saying that the development of supporting guidelines by the AEMC to inform the provision of the rules must be conducted in consultation with industry, consumers and other relevant stakeholders.

4.2 Enabling technologies

To enable consumers to better manage their energy consumption, smart meters that have the capability to: display real time energy consumption on an interval basis; have two way remote communication to facilitate energy management system functions; have the ability to undertake remote re-energisation / de-energisations and; are integrated with web based customer portals, phone applications and in-home displays would provide significant benefit.

With the introduction of electric vehicles and the increasing use of air conditioning, innovative ways of managing peak demand are now necessary. Distribution businesses are already trialling innovative initiatives to reduce a consumer's energy use at peak times. Options such as energy storage technology, voluntary load control programs, automated energy management systems, critical peak pricing and payments to businesses to reduce their energy use at requested times are ways of achieving this but favourable policy conditions are required in order to harbor investment in the appropriate enabling technologies.

Unlike most of the other options, energy storage technologies can provide a range of benefits, such as peak demand management, ramp rate control and voltage management, all of which help avoid network upgrades. While these 'stacked' benefits can be very attractive they accrue differently to different market participants. Ensuring that these multiple benefits can be captured in a payment structure is essential for unlocking greater investment in storage.

Advances in enabling demand management and energy efficiency are moving quickly. Associated enabling technologies need to keep pace. Installation of the appropriate

functionality metering technology is fundamental to capture the full value of existing and future demand side measures can have on managing energy use.

A progressive, well-coordinated rollout of advanced metering infrastructure (AMI) across the nation should be a priority to ensure that all consumers irrespective of what state they live in or what their household status is, have the same opportunities made available to them to participate in the management of their energy consumption. This will also enable economies of scale and allow easier coordination of information provision to consumers. In this context, there may be merit in making this a contestable area although experience overseas suggests this may lead to sub-optimal results.

While it has been suggested by the AEMC[40] that a contestable model of AMI should be used, experience in the UK where this occurred demonstrates that this can lead to sub-optimal results. However if the rollout is taken forward, the provision of the dynamic energy services that can result needs to be competitive and contestable to allow third parties to participate on a non-exclusive and non-proprietary manner by certified providers.

Lessons can be learned from the New Zealand experience of rolling out meters in a contestable market. This would help to allay concerns about stranded assets, infrastructure duplication, meter functionality and data aggregation and access. A contestable approach supported by clear regulations around access and sharing of consumption data will promote innovation and allow the benefits of AMI to be realised.

Lessons can also be learnt to avoid the delays and uncertainties associated with the Victorian Smart Meter rollout. Effective communication and consultation is required with consumers, the community and the industry prior to any rollout which will also assist to build community acceptance and buy-in. Improved and coordinated communication across the industry and government is required.

The CEC reiterates that any roll out of metering and indeed all demand side actions be supported by a coordinated government and industry led education and information campaign to assist business and residential consumers to make informed choices about their own electricity usage and the wider benefits to the energy market. There are many DSP options available and while a wide choice will contribute to market efficiencies, standardised information on available options needs to be provided clearly and simply to consumers in order to avoid presenting unnecessary complexity. Many consumers have little understanding of electricity markets or systems. This needs to be addressed in order to ensure consumers are fully informed of their rights and choices.

[40] AEMC, 2012, *Power of Choice – giving consumers options in the way they use electricity*, Draft Report.

4.3 Flexible pricing options

The CEC supports prioritising the introduction of cost reflective pricing. A cost reflective charging regime would send a price signal to consumers which could more efficiently reflect the cost of supply during peak demand times. The current peak/off peak pricing system is based on legacy settings and no longer represents current consumption patterns, or the peakiness of demand.

The misalignment of price signals between the timeframe for peak tariffs and the wholesale electricity price during these times needs to be addressed. While the timeframes for peak tariffs are generally between 7 am and 11 pm, the wholesale market price does not align to this time profile. In order to drive adjustments in electricity usage, and increased customer recognition of the importance of demand side response, retail electricity prices need to more accurately reflect the occurrence of both peak and off peak wholesale electricity prices.

Currently, retail electricity costs are not really 'prices' at all in the technical sense of a value determined by a market. As Associate Professor Iain McGill[41] argues, the more appropriate terminology for retail prices is a 'schedule of fees', because costs imposed on consumers do not directly relate to the cost of supply at the point of delivery, but rather a series of approximations within a complex and inter-related framework. Costs associated with the electricity network are similarly constrained with expenditure on network maintenance and augmentation capped over five year periods which blunts price signals to consumers. Without the broad implementation of rational pricing mechanisms across the energy market (such as 'dynamic' time-of-use pricing systems which reflect wholesale prices) both consumers and networks are not exposed to the real costs of supply.

Consumers need to be incentivised to change their behaviour and will only be able to respond to price signals provided these signals are able to be understood and accurately reflect their actual consumption patterns. Simshauser and Downer[42] demonstrated an improvement in the load curve and a reduction in overall energy unit costs with the introduction of dynamic pricing.

A shift to a cost-reflective pricing model would need to be carefully staged to ensure that sufficient information is available to consumers to allow them to modify their behaviour, but also to monitor and assist any demographic groups who might be disproportionally worse off under such a scheme due to an inherent inability to shift their consumption patterns.

In Victoria the smart meter rollout has enabled retailers to develop a tariff and web interface which will permit customers to see their consumption patterns and understand the

[41] Associate Professor Iain McGill, School of Electrical, Engineering and Telecommunications, Joint Director (Engineering), Centre for Energy and Environmental Markets, UNSW.
[42] *Limited-form dynamic pricing: applying shock therapy to peak demand growth*, Paul Simshauser & David Downer, AGL Energy, February 2011

implications of peak demand through a price signal[43]. The CEC recommends that this scheme be closely monitored in order to understand the benefits which accrue.

An 'opt out' model for residential and business consumers would ensure that the majority of consumers will be on the cost reflective pricing. An appropriate consumer education campaign should be conducted as to how cost reflective pricing operates and the benefits that consumers can obtain under such a pricing structure. As the AEMC has identified in its Draft Report[44], an 'opt in' model risks many residential consumers not transferring to time varying pricing, therefore reducing the impact of cost reflective pricing generally and resulting in consumers on cost reflective tariffs subsidising consumers on flat tariffs.

The exception to the 'opt out' model should be low income households who should be on an 'opt in' model in order to mitigate concerns about hardship. All consumers and likewise vulnerable consumers must be provided with relevant and timely information on any changes. A review of energy concessions, government rebates and examination of the role Family Tax benefits can make to vulnerable consumers is also important to manage the costs of energy bills.

[43] Origin Energy, 2012, Origin Smart: http://www.originenergy.com.au/originsmart/.
[44] AEMC, 2012, *Power of Choice – giving consumers options in the way they use electricity*, Draft Report.